Figure 1A

Nucleic acid (SEQ ID NO: 10) and protein (SEQ ID NO: 11) sequence of Δ Chy DNA polymerase

```
1      ATGGAAAAGCTTGCCGAACACGAAAATTTAGCAAAAATATCGAAACAATTAGCTACAATC
1      M  E  K  L  A  E  H  E  N  L  A  K  I  S  K  Q  L  A  T  I

61     CTGCGGGAAATACCGTTAGAAATCTCCCTGGAAGATTTAAAAGTTAAAGAACCTAATTAT
21      L  R  E  I  P  L  E  I  S  L  E  D  L  K  V  K  E  P  N  Y

121    GAAGAAGTTGCTAAATTATTTCTTCACCTTGAGTTTAAAAGCTTTTTAAAAGAAATAGAA
41      E  E  V  A  K  L  F  L  H  L  E  F  K  S  F  L  K  E  I  E

181    CCAAAAATAAAGAAAGAATACCAGGAAGGTAAAGATTTGGTGCAAGTTGAAACTGTAGAA
61      P  K  I  K  K  E  Y  Q  E  G  K  D  L  V  Q  V  E  T  V  E

241    ACGGAAGGACAGATTGCAGTAGTTTTTAGTGATGGATTTTATGTTGATGACGGGGAAAAA
81      T  E  G  Q  I  A  V  V  F  S  D  G  F  Y  V  D  D  G  E  K

301    ACAAAGTTTTACTCTTTAGACCGGCTGAATGAAATAGAGGAAATATTTAGGAATAAAAAA
101     T  K  F  Y  S  L  D  R  L  N  E  I  E  E  I  F  R  N  K  K

361    ATTATTACCGACGATGCCAAAGGAATTTATCATGTCTGTTTAGAAAAAGGTCTGACTTTT
121     I  I  T  D  D  A  K  G  I  Y  H  V  C  L  E  K  G  L  T  F

421    CCCGAAGTTTGTTTTGATGCGCGGATTGCAGCTTATGTTTTAAACCCGGCCGACCAAAAT
141     P  E  V  C  F  D  A  R  I  A  A  Y  V  L  N  P  A  D  Q  N

481    CCCGGCCTCAAGGGGCTTTATCTAAAGTATGACTTACCGGTGTATGAAGATGTATCTTTA
161     P  G  L  K  G  L  Y  L  K  Y  D  L  P  V  Y  E  D  V  S  L

541    AACATTAGAGGGTTGTTTTATTTAAAAAAAGAAATGATGAGAAAAATCTTTGAGCAGGAG
181     N  I  R  G  L  F  Y  L  K  K  E  M  M  R  K  I  F  E  Q  E

601    CAAGAAAGGTTATTTTATGAAATAGAACTTCCTTTAACTCCAGTTCTTGCTCAAATGGAG
201     Q  E  R  L  F  Y  E  I  E  L  P  L  T  P  V  L  A  Q  M  E

661    CATACCGGCATTCAGGTTGACCGGGAAGCTTTAAAAGAGATGTCGTTAGAGCTGGGAGAG
221     H  T  G  I  Q  V  D  R  E  A  L  K  E  M  S  L  E  L  G  E
```

Figure 1B

```
721   CAAATTGAAGAGTTAATCCGGGAAATTTATGTGCTGGCGGGGGAAGAGTTTAACTTAAAC
241    Q  I  E  E  L  I  R  E  I  Y  V  L  A  G  E  E  F  N  L  N

781   TCGCCCAGGCAGCTGGGAGTTATTCTTTTTGAAAAACTTGGGCTGCCGGTAATTAAAAAG
261    S  P  R  Q  L  G  V  I  L  F  E  K  L  G  L  P  V  I  K  K

841   ACCAAAACGGGCTACTCTACCGATGCGGAGGTTTTGGAAGAGCTCTTGCCTTTCCACGAA
281    T  K  T  G  Y  S  T  D  A  E  V  L  E  E  L  L  P  F  H  E

901   ATTATCGGCAAAATATTGAATTACCGGCAGCTTATGAAGTTAAAATCCACTTATACTGAC
301    I  I  G  K  I  L  N  Y  R  Q  L  M  K  L  K  S  T  Y  T  D

961   GGCTTAATGCCTTTAATAAATGAGCGTACCGGTAAACTTCACACTACTTTTAACCAGACC
321    G  L  M  P  L  I  N  E  R  T  G  K  L  H  T  T  F  N  Q  T

1021  GGTACTTTAACCGGACGCCTGGCGTCTTCGGAGCCCAATCTCCAAAATATTCCCATCCGG
341    G  T  L  T  G  R  L  A  S  S  E  P  N  L  Q  N  I  P  I  R

1081  TTGGAACTCGGTCGGAAATTACGCAAGATGTTTATACCTTCACCGGGGTATGATTATATT
361    L  E  L  G  R  K  L  R  K  M  F  I  P  S  P  G  Y  D  Y  I

1141  GTTTCGGCGGATTATTCCCAGATTGAATTAAGGCTTCTTGCCCATTTTTCCGAAGAGCCC
381    V  S  A  D  Y  S  Q  I  E  L  R  L  L  A  H  F  S  E  E  P

1201  AAGCTTATTGAAGCTTACCAAAAAGGGGAGGATATTCACCGGAAAACGGCCTCCGAGGTG
401    K  L  I  E  A  Y  Q  K  G  E  D  I  H  R  K  T  A  S  E  V

1261  TTCGGTGTATCTTTGGAAGAAGTTACTCCCGAGATGCGCGCTCATGCCAAGTCGGTGAAC
421    F  G  V  S  L  E  E  V  T  P  E  M  R  A  H  A  K  S  V  N

1321  TTCGGCATTGTTTATGGCATTAGTGATTTTGGTTTAGGCAGAGACTTAAAGATTCCCCGG
441    F  G  I  V  Y  G  I  S  D  F  G  L  G  R  D  L  K  I  P  R

1381  GAGGTTGCCGGTAAGTACATTAAAAATTATTTTGCCAACTATCCCAAAGTGCGGGAGTAT
461    E  V  A  G  K  Y  I  K  N  Y  F  A  N  Y  P  K  V  R  E  Y
```

Figure 1C

```
1441   CTCGATGAACTTGTCCGTACGGCAAGAGAAAAGGGATATGTGACCACTTTATTTGGGCGA
481     L  D  E  L  V  R  T  A  R  E  K  G  Y  V  T  T  L  F  G  R

1501   AGACGCTATATTCCTGAGCTATCTTCAAAAAACCGCACGGTTCAGGGTTTTGGCGAAAGG
501     R  R  Y  I  P  E  L  S  S  K  N  R  T  V  Q  G  F  G  E  R

1561   ACGGCCATGAATACTCCCCTTCAGGGCTCGGCTGCCGATATTATTAAGCTTGCAATGATT
521     T  A  M  N  T  P  L  Q  G  S  A  A  D  I  I  K  L  A  M  I

1621   AATGTAGAAAAAGAACTTAAAGCCCGTAAGCTTAAGTCCCGGCTCCTTCTTTCGGTGCAC
541     N  V  E  K  E  L  K  A  R  K  L  K  S  R  L  L  L  S  V  H

1681   GATGAGTTAGTTTTAGAAGTGCCGGCGGAAGAGCTGGAAGAGGTAAAAGCGCTGGTAAAA
561     D  E  L  V  L  E  V  P  A  E  E  L  E  E  V  K  A  L  V  K

1741   GGGGTTATGGAGTCGGTGGTTGAACTGAAAGTGCCTTTAATCGCTGAAGTTGGTGCAGGC
581     G  V  M  E  S  V  V  E  L  K  V  P  L  I  A  E  V  G  A  G

1801   AAAAACTGGTATGAAGCGAAGTAA
601     K  N  W  Y  E  A  K  *
```

Figure 2:

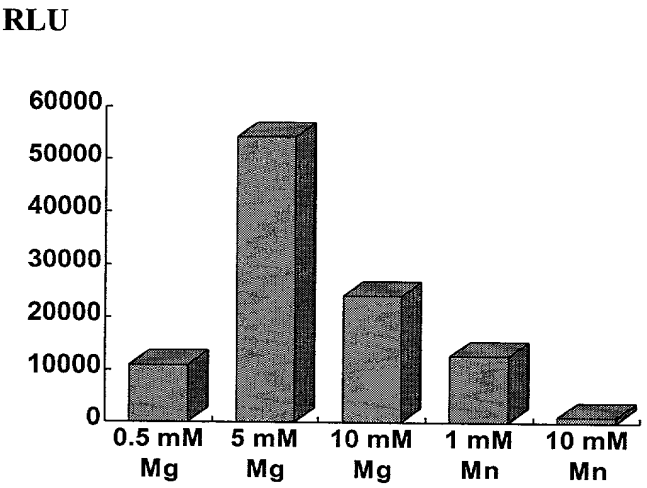


Figure 3:

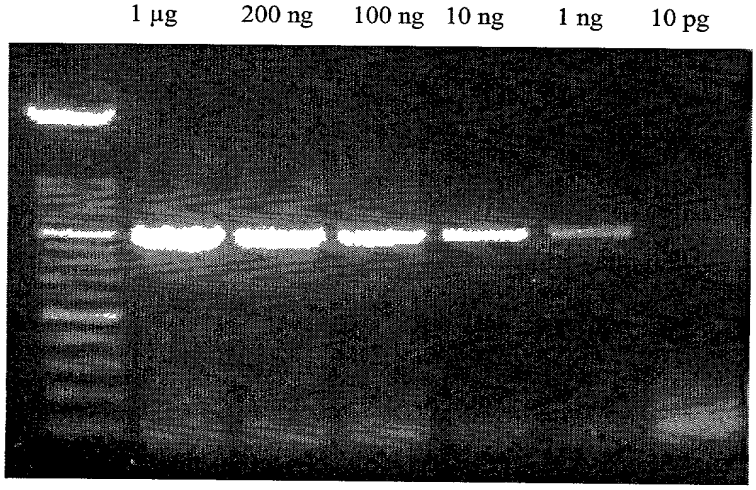


Figure 4:

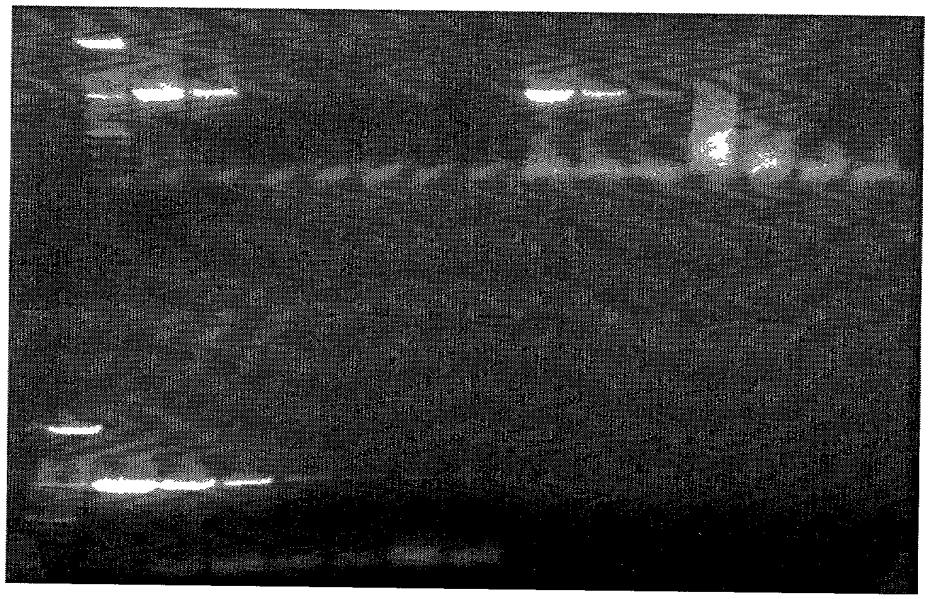

Tth "one tube"
ΔChy "one tube"
M 1 0.1 10 1 100 10 1 1 0.1 10 1 100 10 1
µg µg ng ng pg pg pg µg µg ng ng pg pg pg
M 1 0.1 10 1 100 10 1
µg µg ng ng pg pg pg
ΔChy "two tube"

Figure 5:

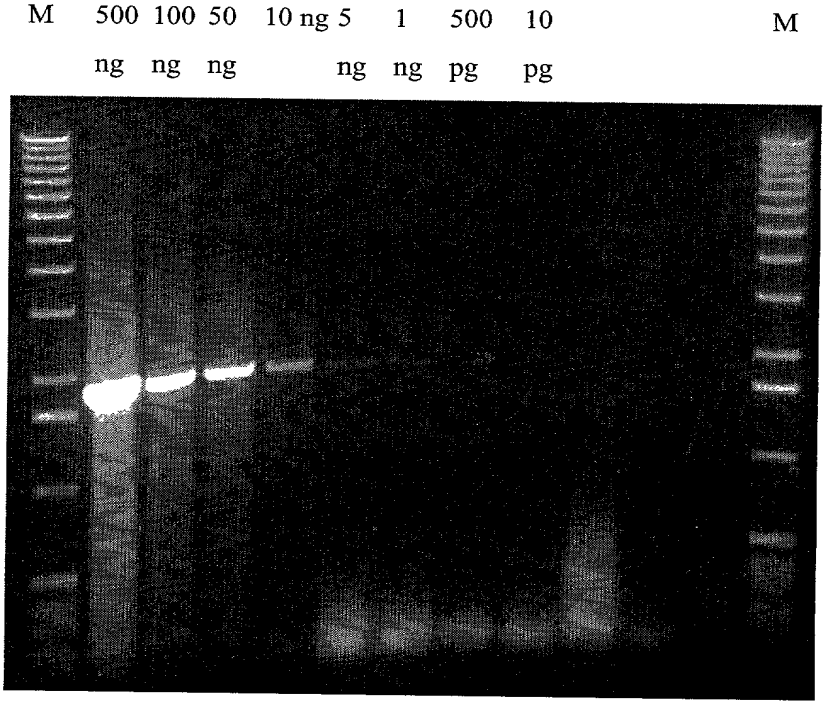


Figure 6:

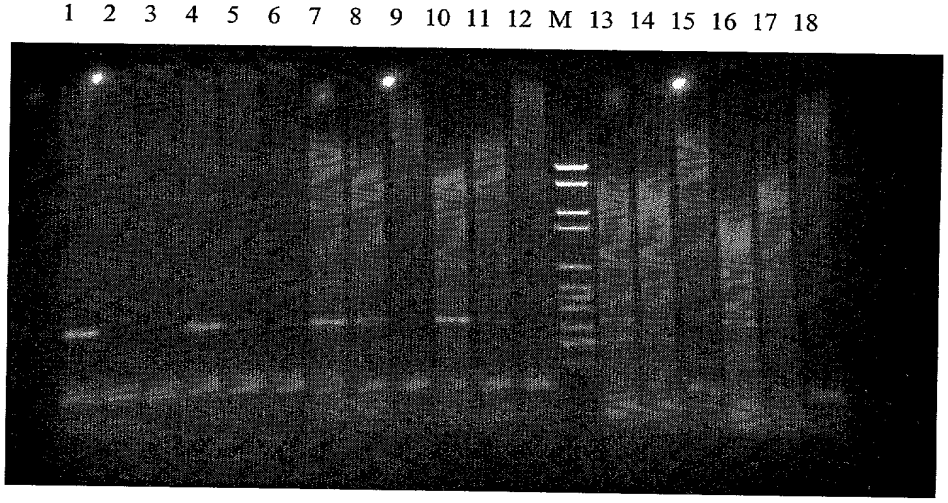
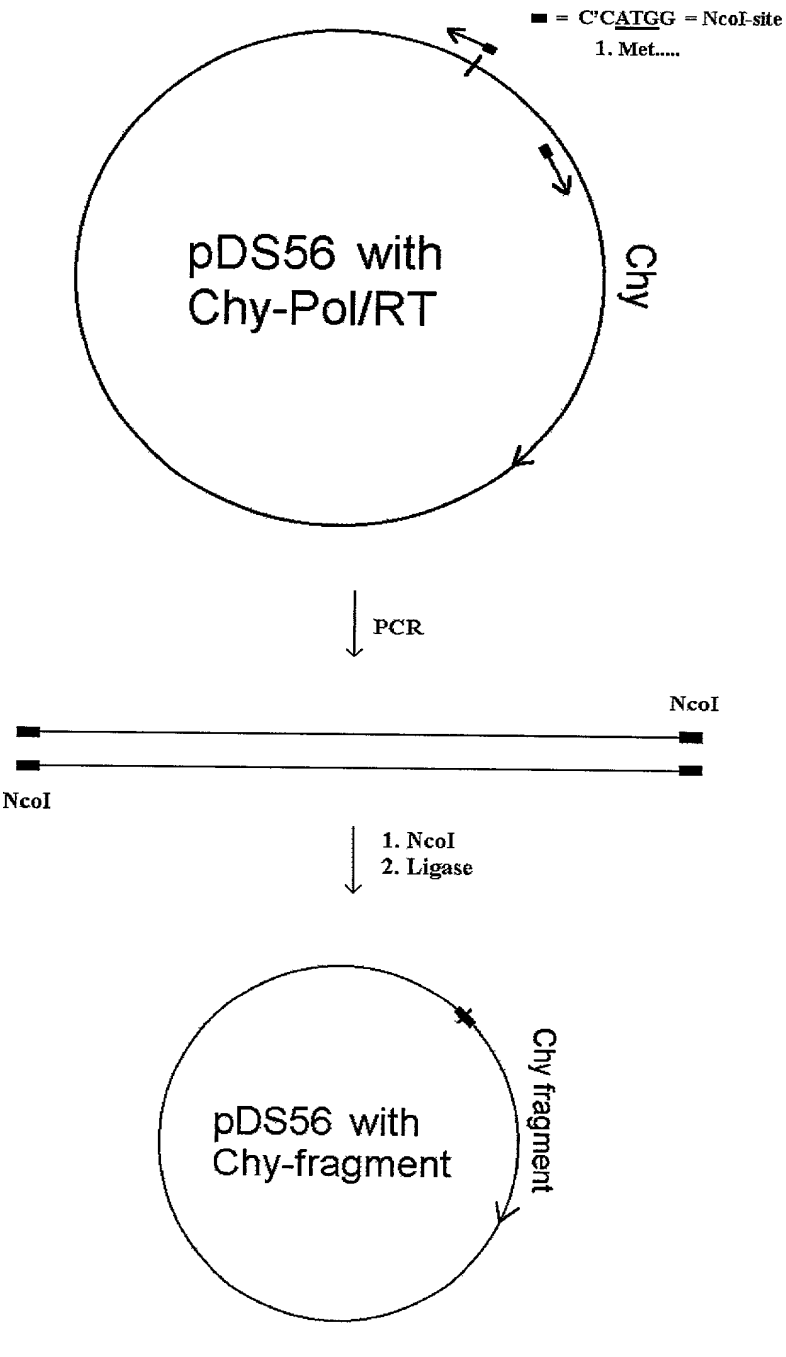


Figure 7:


■ = C'CATGG = NcoI-site
1. Met.....
pDS56 with
Chy-Pol/RT
Chy
PCR
NcoI
NcoI
1. NcoI
2. Ligase
pDS56 with
Chy-fragment
Chy fragment